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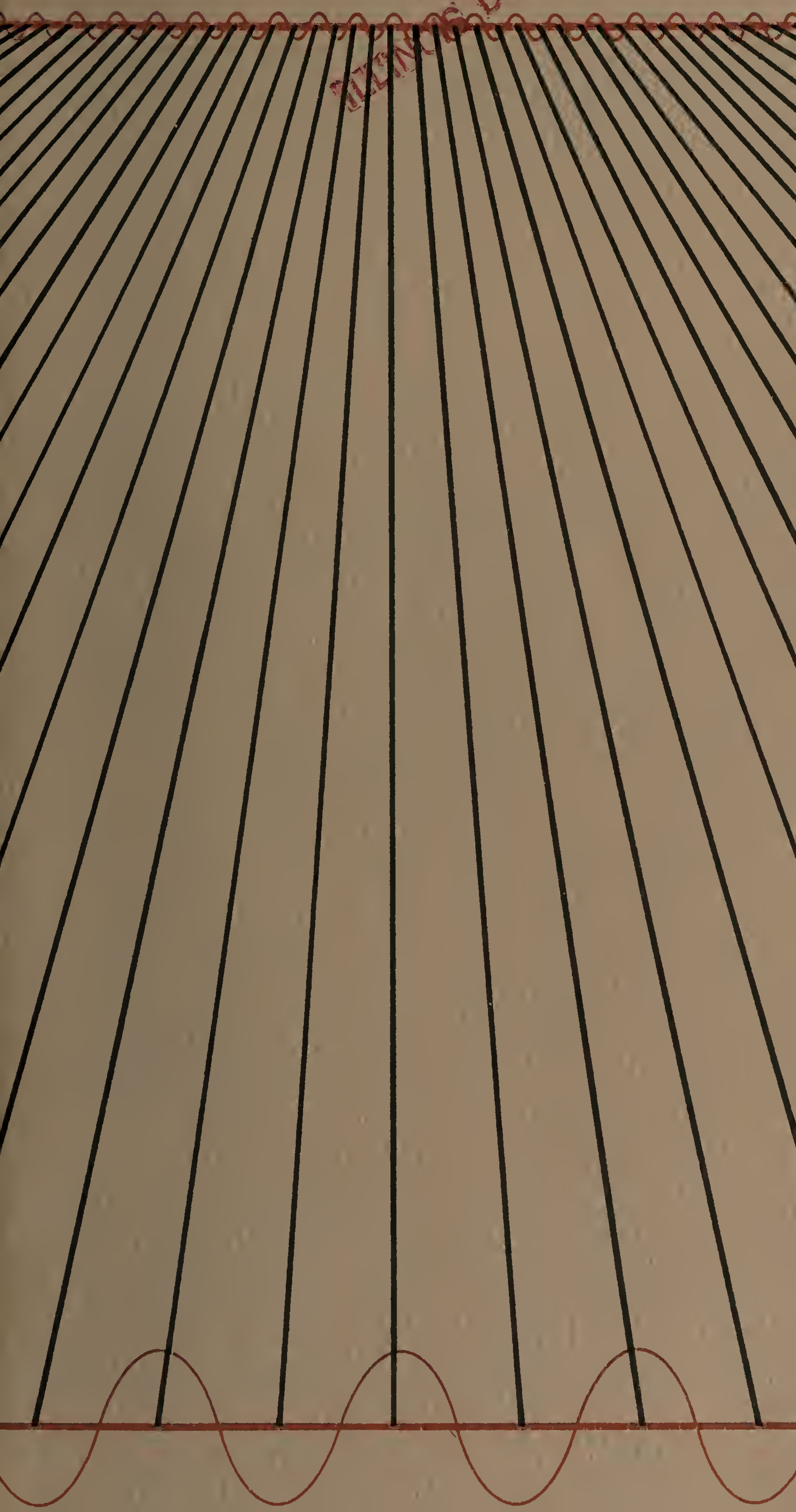
# Noise on the Farm



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## The Problem

On an average day, a member of the southeast Sudan tribe, the Mabaans, does not hear a sound louder than a bird call. Studies show that the average Mabaan at age 75 can hear as well as the average American at 25.

Technological life is not a quiet existence. Machines mass produce many fine goods, but they also mass produce sound.

Even the peacefulness of country living has been compromised by the noise of tractors, harvesters, grain mills, grain dryers, chain saws and snowmobiles. No longer are farms islands of silence in modern society.

In fact, a 1968 study indicates that farmers suffer more hearing loss than the general public. And one study shows that even many farmers in the 30-34 age group already have suffered hearing loss.

Tractor operators face the greatest hazard because tractor noise levels range from 90 to 110 decibels (decibels are units used to measure sound levels).

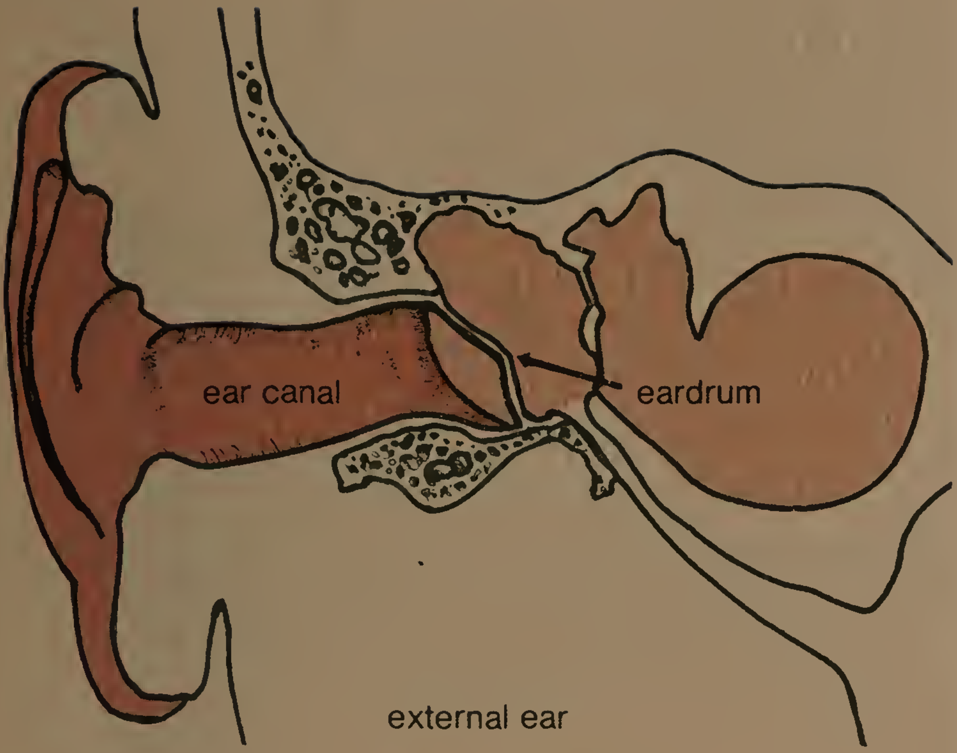
Also, a 1970 Nebraska study showed that the average sound level of tractors was 98 decibels (dBA) at maximum power and almost 95 dBA at 50 percent of the maximum pull. This is a good deal higher than the 85 dBA recommended as the safe limit for farm operators.

## The Damage

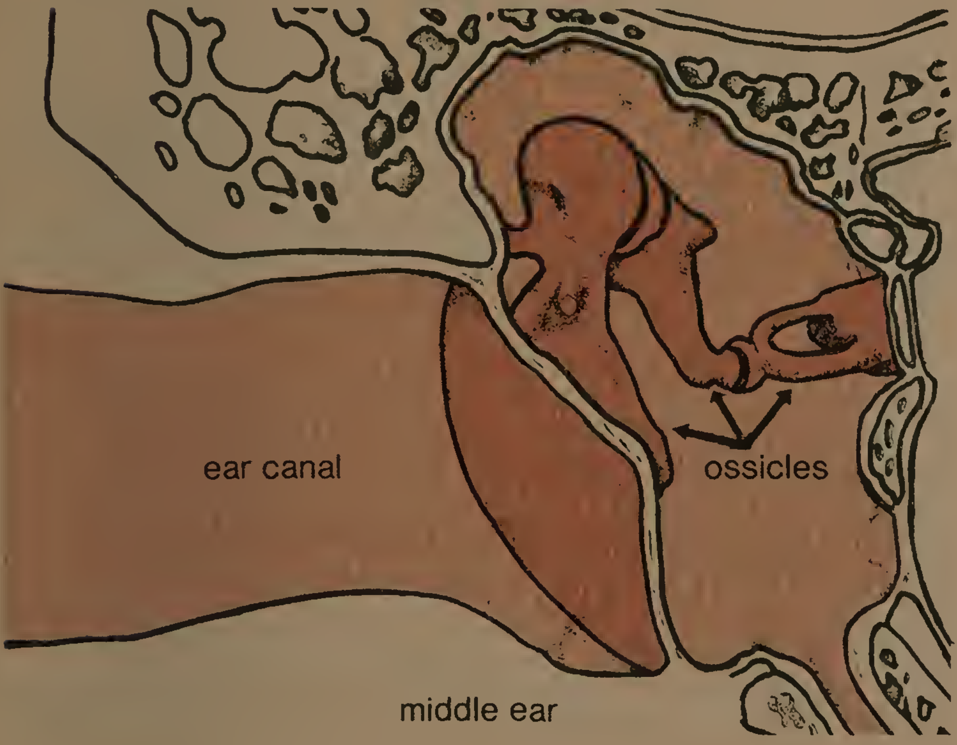
An understanding of what excessive noise does to the ear requires an understanding of the ear structure.

The ear, a precise sensing mechanism which converts disturbances in the air into sounds, is divided into three main components — the external ear, middle ear and inner ear.

The external ear consists of visible parts such



external ear



middle ear

as the ear lobe, as well as the ear canal through which sound pressure passes.

Sound waves pass through the eardrum, then reach the ossicles, a trio of bones smaller than a dime. In turn, these bones transmit the vibrations into the inner ear.

In the inner ear, vibrations excite a membrane which contains hair-like projections known as hair cells. These cells pick up the vibrations and transform them into signals that are taken to the brain via the auditory nerve. The hair cells analyze the sound. They tell the brain how loud the sound is and the frequency of the sound.

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Under the stress of excessive noise, hair cells may become fatigued; but after rest and quiet, they can recover. However, if a person is exposed to excessive noise too long, hair cells may rip, suffering permanent damage. Damaged sensory tissue does not regenerate.

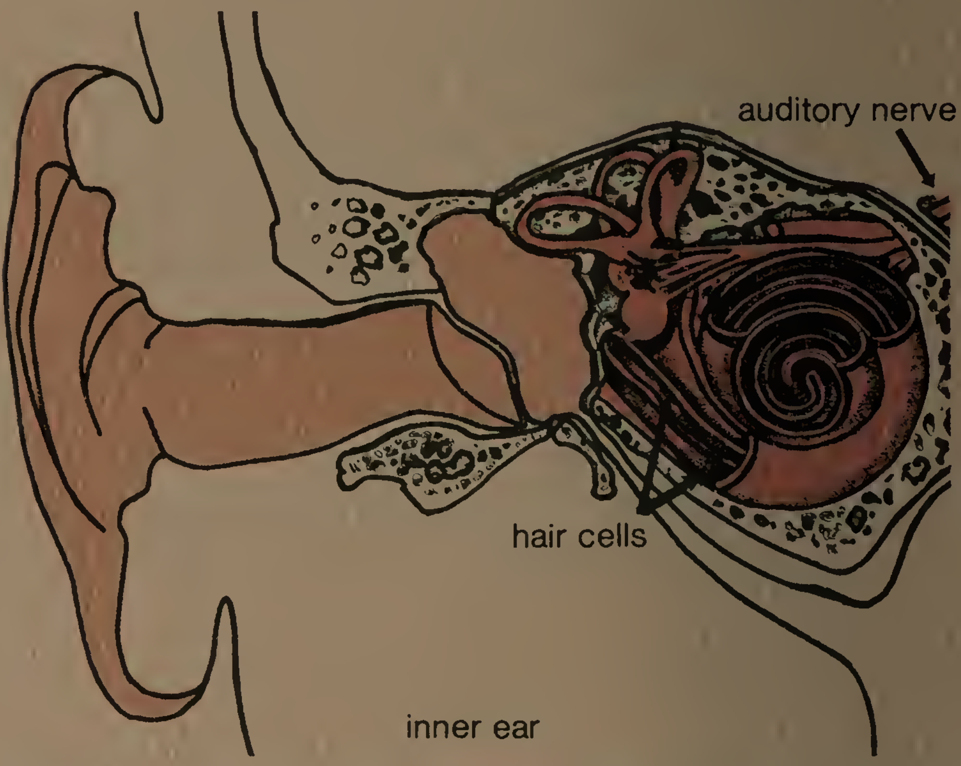
The amount of damage to an ear depends on the sound's loudness, pitch, length of exposure and the person's surroundings, age, previous hearing problems and distance from the source.

Traumatic hearing loss comes from sudden exposure to an extremely loud noise, such as an explosion. This is less common than other types of hearing damage.

## The Solution

There is hope for the farmer who must work under a blitzkrieg of noise. Two basic ear protectors — ear muffs and ear plugs — are available.

Ear muffs, which resemble stereo headphones, cut out loud noises, without making it harder to hear speech or signals. Ear plugs are made of rubber, plastic, wax or cotton-like fibers and are placed in the ear canal. Ear plugs should be fitted by a doctor and kept clean to prevent infection.



Cotton is not an effective ear plug.

Farmers also should use tractors that have well insulated cabs. Air conditioning may be necessary for the cab because windows must be kept shut. When the cab window is open, the advantage of noise insulation is spoiled.

Keep noise down wherever possible. That may mean keeping the car or tractor's exhaust system in good repair, comparing noise values when buying new tractors, keeping machinery well-lubricated and keeping noisy equipment away from dwellings.

Look for subtle signs of hearing loss: muffled sounds, ears ringing or the constant need to ask "What?" If you suspect a hearing loss, take a hearing test and, if necessary, see a specialist.

## The Decibel

Loudness is measured in units known as decibels (dBA). An increase of even a few decibels can mean a considerable increase in sound intensity. Here are decibel levels for common sounds at a typical distance from the source:

| | |
|---|---|
| 0 | Acute threshold of hearing |
| 15 | Average threshold of hearing |
| 20 | Whisper |
| 30 | Leaves rustling, very soft music |
| 40 | Average residence |
| 60 | Normal speech, background music |
| 70 | Noisy office, inside of auto at 60 mph |
| 80 | Heavy traffic, window air conditioner |
| 85 | Inside acoustically insulated protective tractor cab in field |
| 90 | Hearing damage may occur after excess exposure to noise above 90 dBA |
| 100 | Noisy tractor, power mower, snowmobile, motorcycle |
| 120 | Thunderclap, jack hammer, basketball crowd |

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The Occupational Safety and Health Administration (OSHA) has set standards showing how long you can be exposed to various sound levels before hearing is impaired.

| Maximum safe duration per day-hours | Sound level-dBA |
|---|---|
| 8 | 90 |
| 4 | 95 |
| 2 | 100 |
| 1 | 105 |
| ½ | 110 |
| ¼ or less | 115 |

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